Remarks

I. Status of the claims

Claims 1, 2, 8, 14-16, 21-27 are pending. Claims 3-7, 9-13, and 17-20 have been cancelled. Claims 1 and 14 have been amended to incorporate the limitations originally recited in claim 7, and claims 21-24 have been amended to correct the claim dependency. No new matter has been introduced through these amendments.

II. Objection under 37 C.F.R. § 1.75

The examiner has objected to claims 10-13 under 37 C.F.R. § 1.75 as being an exact duplicate of claims 4-7. In this response, Applicants have cancelled claims 10-13. Accordingly, Applicants respectfully request that this objection be withdrawn.

III. Rejection under 35 U.S.C. § 102(b)

The examiner has rejected claims 1, 3-6, 8-13, 15-19, and 21-26 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,121,983 to Fork et al. ("Fork").

Applicants have introduced the limitations recited in claim 7 into independent claims 1 and 14. The subject matter originally recited in claim 7 was not alleged by the examiner to be taught by Fork, and Applicants respectfully submit that Fork fails to teach pending independent claims 1 and 14. Accordingly, Applicants respectfully request that the examiner withdraw this rejection.

IV. Rejection under 35 U.S.C. § 103(a) over Fork in view of Ohkubo

The examiner has rejected claims 2, 7, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Fork in view of U.S. Patent No. 6,538,682 to Ohkubo ("Ohkubo"). According to the examiner, Fork discloses a xerographic printing system comprising a laser printbar imager assembly (VCSEL printbar) including a plurality of micro-optic light-emitting arrays including a plurality of vertical cavity surface-emitting lasers, wherein each vertical cavity surface-emitting laser emits a laser beam focused with a micro-optic element. The examiner combines the teachings of Fork with Ohkubo, which the examiner describes as disclosing an exposure device

comprising an organic light-emitting elements configured as a two-dimensional array with the rows and columns staggered along the process direction. The motivation to combine these two reference, according to the examiner, would have been to reduce optical crosstalk, as allegedly suggested by Ohkubo. Applicants respectfully traverse this rejection.

Applicants have amended independent claim 1 to recite a micro-optic light-emitting array having a plurality of vertical cavity surface-emitting lasers, wherein (a) the plurality of vertical cavity surface-emitting lasers are arranged in a two-dimensional configuration of rows and columns that are staggered along a process direction, and (b) each vertical cavity surface-emitting laser emits a laser beam focused with a micro-optic element. A similar amendment has been made to the other independent claim, claim 15.

As stipulated to by the examiner, Fork does not teach a micro-optic light-emitting array having a plurality of vertical cavity surface-emitting lasers arranged in a two-dimensional configuration of rows and columns that are staggered along a process direction. The examiner relies on Ohkubo for teaching this element.

However, Ohkubo relates to an electroluminescence (EL) device that emits incoherent light diffusely in all directions within a hemisphere. A given microlens will not capture all of the light emitted from a single EL device since the light diverges fully into a hemisphere. There will therefore be crosstalk between EL devices at the recording medium even if the microlens is larger than the EL device pitch or even greater. Also the position of the EL device and the position of the recording medium is determined by geometric optics. Because the EL-based system is an incoherent imaging system, the numerical aperture will be large to capture a significant amount of light, consequently providing a small depth of focus.

In contrast, the vertical cavity surface-emitting laser (VCSEL) taught in Fork is a coherent laser device that emits a beam with a Gaussian or near-gaussian irradiance profile. The emitted light will fall within a cone angle defined by the wavelength of the emitted light and the effective aperture of the VCSEL device. In the VCSEL printbar, the position of the VCSEL and recording medium is determined by wave optics. The microlenses are oversized to ensure that almost all of the light is captured and not clipped. In this manner crosstalk between different VCSEL elements will not occur on the recording medium. A diffraction limited performance is used to provide a smaller spot size at the recording medium. In the VCSEL-based coherent

imaging system, the numerical aperture need not be larger to capture the less divergent beam emitted by the VCSEL. Therefore the system will have a larger depth of focus.

Because of these differences between incoherent and coherent imaging systems, one skilled in the art would not typically transfer an application used in an EL device, such as that taught in Ohkubo, to a VCSEL device, such as that taught in Fork.

In this case, the Fork device uses a projection lens to image a VCSEL/microlens/scanning MEMS mirror subsystem onto the recording medium. The microlenses function as condenser lenses and the scanning MEMS mirror subsystem images and magnifies the VCSEL devices onto the recording medium. The spots on the VCSEL array are laid out in orthogonal rows and columns, so there is no need to stagger the light emitting elements.

Ohkubo, on the other hand, staggers the exposure devices to reduce optical crosstalk and form an image at high resolution. See col. 2, lines 6-9. Reducing optical crosstalk, however, is not at issue in Fork. Fork assures a finite overlap of beam through placement of the lasers and electronic correction for assembly errors. See col. 9, line 55 to col. 10, line 36. Additionally, it is not clear that staggering the light-emitting elements of Fork would produce images of higher resolution. As described above, the VCSEL system has a larger depth of focus whereas the EL system has smaller depth of focus. As understood by one of skill in the art, improving the resolution for systems using different depths of focus requires different technologies.

Accordingly, one skilled in the art would not have the requisite motivation to modify the teachings of Fork with the teachings of Ohkubo based on differences between the technologies. If modified, there would be no expectation that the objectives described in Ohkubo could be successfully replicated the Fork device. Therefore, the teachings of Fork in view of Ohkubo do not render obvious Applicants' claimed invention.

In view of these comments, Applicants respectfully request that the examiner withdraw the rejection based on 35 U.S.C. § 103(a).

V. Rejection under 35 U.S.C. § 103(a) over Fork in view of Kwak

The examiner has rejected claims 14 and 27 under 35 U.S.C. § 103(a) as being unpatentable over Fork in view of U.S. Patent Application Publication No. 2004/0120376 to Kwak ("Kwak").

As discussed above, the limitations of claim 7 have been introduced into independent claims 1 and 15. The examiner does not assert that Fork in view of Kwak suggests the amended claims, and Applicants respectfully submit that this is not the case. If combined with Fork and/or Ohkubo, Kwak would not overcome the deficiencies of these references in relation to the claimed invention, as described above.

Accordingly, Applicants respectfully request that the examiner withdraw this rejection based on 35 U.S.C. § 103(a).

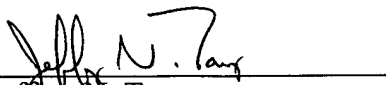
VI. Conclusion

Applicants respectfully request reconsideration of this application in view of the above amendments and remarks.

Except for issue fees payable under 37 C.F.R. §1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 19-2380. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. §1.136(a)(3).

Respectfully submitted,

NIXON PEABODY LLP



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